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(54) Title: PHENANTHRIDINIUM DERIVATIVES AS DNA BINDING AGENTS

(57) Abstract: New classes of heterocyclic aromatic cationic compounds are disclosed, and in particular new classes of phenanthridinium derivatives, most notably dihydro-imidazo-phenanthridinium (DIP) compounds. These findings are based on the reaction of the middle b ring of a phenanthridinium core with primary amines to form DIP compounds (Formula A) or secondary amines to form 2-aminoalkyl phenanthridinium derivatives (Formula B). These reactions can also be applied to other classes of starting compounds which comprise a 6-membered ring aromatic heterocycle having a ring nitrogen and at least one alpha hydrogen atom which can be reacted with a primary or secondary amine.

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB2004/005004

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07D471/04 A61K31/437

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, CHEM ABS Data, BEILSTEIN Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	<p>PARENTY, A.D. ET AL.: "General One-Pot, Three-Step Methodology Leading to an Extended Class of N-Heterocyclic Cations: Spontaneous Nucleophilic Addition, Cyclization, and Hydride Loss" JOURNAL OF ORGANIC CHEMISTRY, vol. 69, 8 June 2004 (2004-06-08), pages 5934-5946, XP002325553 table 1</p> <p style="text-align: center;">----- -/-</p>	1-40

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents :

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Date of the actual completion of the international search

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International Application No

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	LYNCH, M.A. ET AL.: "Synthesis, Biological Activity and Comparative Analysis of DNA Binding Affinities and Human DNA Topoisomerase I Inhibitory Activities of Novel 12-Alkoxy-benzo[c]phenanthridinium Salts" BIOORGANIC&MEDICINAL CHEMISTRY LETTERS, vol. 11, 2001, pages 2643-2646, XP002325554 the whole document -----	1-40
A	WHITTAKER, J. ET AL.: "The interaction of DNA-targeted platinum phenanthridinium complexes with DNA" NUCLEIC ACIDS RESEARCH, vol. 26, 1998, pages 3933-3939, XP002325555 figure 1 -----	1-40
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			US	5561042 A	01-10-1996
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			WO	9603384 A1	08-02-1996
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